

Navigation Improvement Study
Reconnaissance Report

PRELIMINARY

Narraguagus River Milbridge, Maine

February 1989



**US Army Corps
of Engineers**
New England Division

CONTINUING AUTHORITIES FACT SHEET
NARRAGUAGUS RIVER
PRELIMINARY RECONNAISSANCE

February 1989
New England Division

1. Project: Narraguagus River, Milbridge, Maine
CWIS: 87627

Congressional District: 2nd, Rep. Olympia J. Snowe

County: Washington

2. Authority: Section 107, River & Harbor Act of 1960, as amended: Small Navigation Project.

3. Location of Study Area: The project area is located in the town of Milbridge Maine, along the Narraguagus River, as shown in Figure 1. Milbridge is situated along the west shore of the Narraguagus River, which enters the Narraguagus Bay from the northwest.

4. Dates of Corps' Action:
Reconnaissance Phase initiated - October 1988

5. Existing Federal Navigation Project: The existing Federal navigation project in the Narraguagus River, as shown in Figure 2, provides for a channel 11 feet deep, at mean low water (MLW) and 150 feet wide from deep water in Narraguagus Bay to Wyman. The channel then continues at 9 feet MLW and 100 feet wide to Milbridge with widening opposite Milbridge for a 2 acre anchorage at a depth of 6 feet MLW. The Federal Channel proceeds north at a depth of 6 feet MLW by 100 feet wide to the landing downstream from the highway bridge with widening near the landing for a 2.75 acre anchorage at a depth of 6 feet MLW. The existing anchorage does not provide the necessary protection for the commercial fishing fleet during storm conditions.

Jordan's Pier, located in the Narraguagus Bay, serves approximately forty three local, permanent, commercial fishing boats. The pier was constructed in the 1970's after the Corps of Engineers dredged the Narraguagus River and Bay to provide a Federal navigation channel and anchorages.

6. Problems, Needs and Opportunities Identified: The commercial fishing fleet is primarily concerned about problems with safe, deep water anchorage space. Strong southeastern and northeastern wind generated waves have caused damage to a majority of the boats. These waves have also caused vessels to break free from their moorings. Throughout the winter, ice flows down the Narraguagus River and causes damage to Jordan's Pier and to boats moored in the vicinity. Three fishing boats were lost during the year of 1986 due to storm conditions and an average of 1 to 2 boats per year are severely damaged. During storm conditions, portions of the fleet take refuge up river at the town wharf in Milbridge, run their boats into protective coves (tide permitting), or transfer to nearby safe harbors. Some fishermen transfer their moorings to safe, nearby harbors during the winter months, rather than risk damage by staying in the Milbridge area. The fishermen that do transfer their boats must add significant transit time and cost, in travelling to and from

their boats. The fleet incurs both damages and tidal delays due to strong winds, storms and ice during the winter months. Many boats ground or hit ledge when they break free from their moorings, during storms.

Ideally, local fishermen using the pier seek anchorage in the immediate area. Many fishermen, however, anchor in various locations other than the Jordan Pier area, because of the risk of damage created by the wave action and the lack of deep water anchorage space. Currently, fishermen anchor just south of the pier and Turner Point, in Narraguagus River and Bay.

Navigation improvements examined in this study, solely for the commercial fishing fleet, would decrease tidal delays and damages and eliminate the need to relocate boats during storms. Improvements would also decrease the amount of damage caused by ice and storm conditions. Through the elimination of ice and storm damages, the fleet would be capable of operating throughout the winter, eliminating boat removal and storage costs.

7. Alternative Plans Considered: Navigation improvement plans considered for the preliminary reconnaissance study focused on sheltering the local commercial fishing fleet from ice, storms and low water, to prevent damage at anchorages. The following alternative plans were considered: increase the available deep water anchorage and provide a breakwater, at either Stover Cove or Turner Cove.

8. Description of Evaluated Plan: A plan has not yet been developed to the point where it can be considered optimized or ready to be recommended. The evaluated plan appears to be locally acceptable and to meet the requirements for Federal involvement. This evaluated plan consists of an anchorage area at Turner Cove, in addition to the existing Federal navigation project in the Narraguagus River. This plan as shown in Figure 3, will provide sufficient, deep water anchorage space and protection for the entire commercial fishing fleet from strong winds, storms and ice during the winter months. This plan will also eliminate tidal delays and temporary transfer of the fleet. The new anchorage area in Turner Cove will provide 1.1 acres at 9-feet MLW and 2.5 acres at 7-feet MLW. An access channel at a depth of 9 feet MLW and 75 feet wide will connect the anchorage area to the existing Federal channel.

Construction of this navigation improvement would require the removal of approximately 87,000 cy of ordinary material. Due to lack of subsurface information, it has been assumed for this study phase, that there will not be any rock to remove in dredging Turner Cove. The likely disposal site for the dredged material is an open water site that was previously used in construction of the original navigation project. This site has the approval of the local sponsor.

Alternative sites that could provide protected anchorage area, for the commercial fleet, were investigated. Information gained, through site visits, available data and discussions with local fisherman, was used to evaluate the options.

The Turner Cove alternative appears to be implementable. This is also the option preferred by the local fishermen. The possibility of a breakwater was eliminated from this phase of the study, because it appears to be economically infeasible, however, in the next phase of the study, the breakwater option will be more thoroughly investigated.

NARRAGUAGUS RIVER, MILBRIDGE, ME. 87627

9. Views of the Sponsor: The Town of Milbridge, Maine is the study sponsor. The recommended plan addresses the sponsor's need for additional, safe anchorage. The Town of Milbridge concurs with the proposed navigation improvement plan.

10. Views of Federal, State and Regional Agencies:

11. NED Plan: N/A

12. Status of NEPA Document: To be initiated during the feasibility study.

13. Significant Effects: N/A

14. Implementation Schedule: N/A

15. Supplemental Information: N/A

16. HQUSACE Review: N/A

Submitted By: _____ / _____ / Study Manager

Planning Division Approval:

	<u>SIGNATURE</u>	<u>DATE</u>
Chief, Section	_____	_____
Chief, Plan Form Branch	_____	_____
Chief, Planning Division	_____	_____

ECONOMIC AND FINANCIAL DATA
RECOMMENDED PLAN
(All costs in thousands of dollars)

Estimated Implementation Costs:
(February 1989 price levels)

Federal	\$ 813
Non-Federal	203
U.S. Coast Guard	8
Total	\$1,024

Economic Data:
(8 7/8%, 50 year life)

Annual Cost: \$109
(Includes \$ 16 OM&R;
Fed OM&R = \$16)
Annual Benefit: \$160
BCR: 1.5

Non-Federal Requirements: The local sponsor would be required to comply with the standards of the local cooperation agreement which include:

- a. provide all lands, easements and rights of way necessary for project construction and maintenance.
- b. contribute at least 10% of the first cost to be paid, prior to construction
- c. contribute no more than 10% of the first cost, to be repaid over a period up to 30 years.

Cost Allocation:

<u>Purpose</u>	<u>Federal</u>	<u>Non-Federal</u>	<u>Avg Annual Benefits</u>
Commercial Nav.	\$813	\$203	\$160
TOTAL	\$813	\$203	\$160

Allocation To Date:

Reconnaissance	\$ 10.0	\$ 0.0	Existing Project authorized by the River & Harbor Act of 1962. Existing project cost \$ 821,144 (all Federal).
Detailed Project			
Study	0.0	0.0	
TOTAL	\$ 10.0	\$ 0.0	

Remaining Requirements:

Reconnaissance	\$ 45.0	\$ 0.0
Definite Project		
Study	75.0	75.0
TOTAL	\$120.0	\$ 75.0

TABLE 1
 Evaluated Plan of Improvement
 Estimates of First Cost and Annual Costs
 Narraguagus River, Milbridge, Maine
 Preliminary Reconnaissance

ESTIMATE OF FIRST COST

Dredging Ordinary Material	
87,000 cy @ \$7.20/cy	\$ 627,000
Contingencies	157,000
Subtotal Construction Cost	\$ 784,000
Engineering and Design	\$ 47,000
Supervision and Administration	185,000
TOTAL FIRST COST	\$1,016,000
Aids to Navigation (2 buoys)	\$ 8,000
TOTAL IMPROVEMENT COST	\$1,024,000
Interest During Construction	\$ 7,000
TOTAL INVESTMENT COST	\$1,031,000

ANNUAL COSTS

Interest and Amortization (8 7/8%)	
1,031,000 x 0.09003	\$ 93,000
Maintenance Dredging (1,800 cy @ \$8.00/cy)	15,000
Maintenance of 2 Navigation Aids	1,000
TOTAL	\$ 109,000



NARRAGUAGUS RIVER, MILBRIDGE, MAINE

SITE LOCATION MAP

scale 1:24000

figure 1

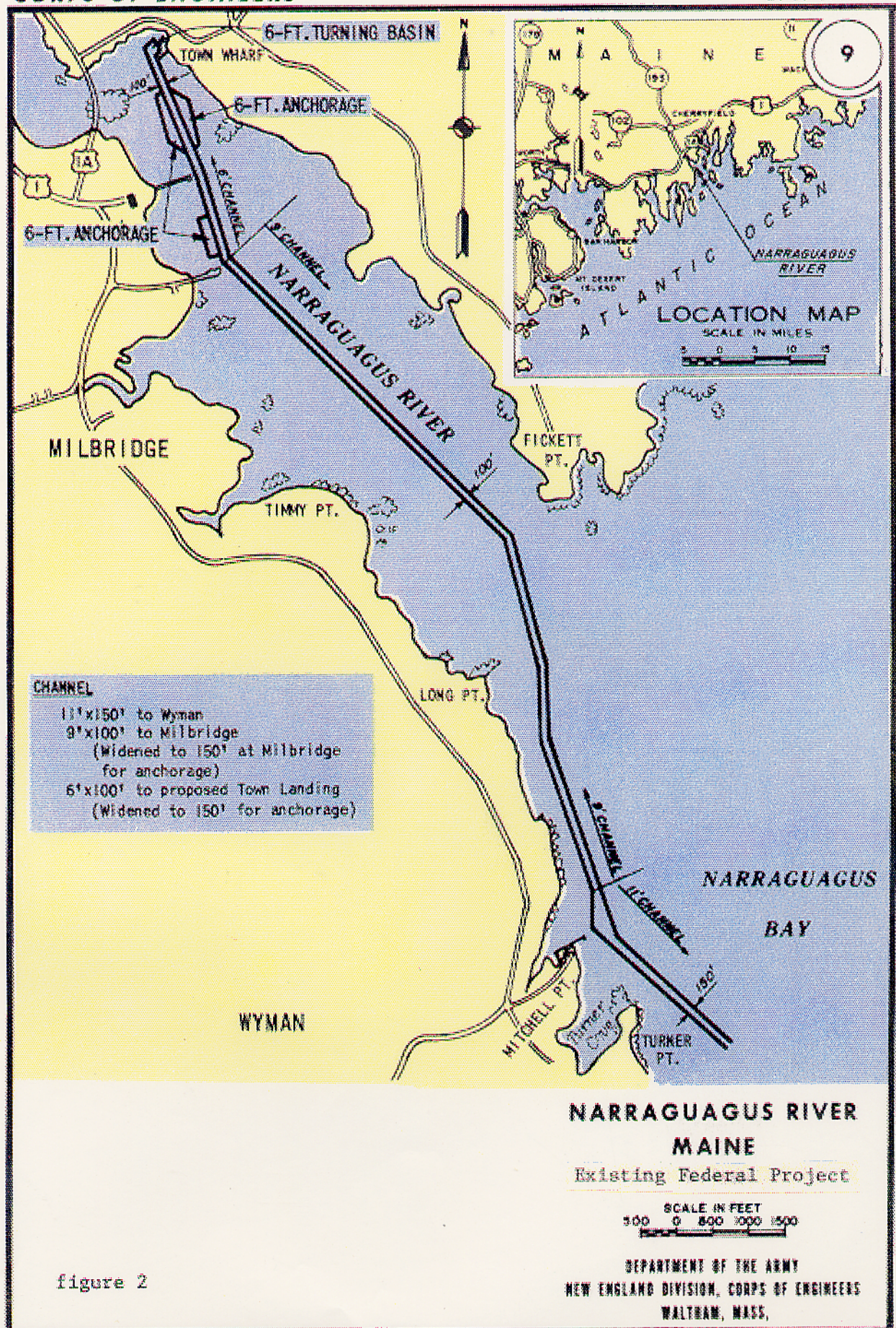


figure 2

JASPER WYMAN
& SON

AWASH
M.H.W.

EXISTING FEDERAL CHANNEL

AWASH
M.H.W.

MITCHELL PT.

1.1 ACRE
9-FT. ANCHORAGE

LOG WHARF
IN RUIN

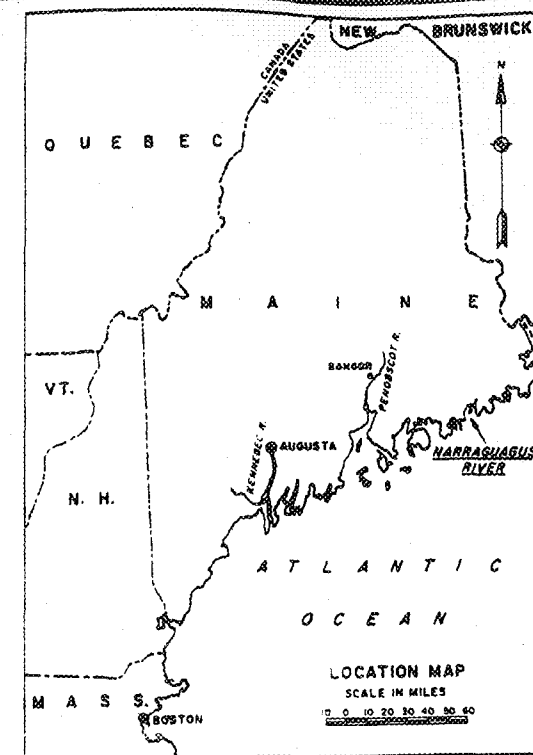
PIER IN RUIN
CRIBBING REMAINS

TURNER
COVE

2.5 ACRE
7-FT. ANCHORAGE

ACCESS CHANNEL
75' x 9' M.L.W.

TURNER (1959)



NARRAGUAGUS RIVER, MILBRIDGE, MAINE
EVALUATED PLAN OF IMPROVEMENT
figure 3

PRELIMINARY RECONNAISSANCE REPORT

BUCKS HARBOR
MACHIASPORT, MAINE

ECONOMIC ANALYSIS

FEBRUARY 1989

NARRAGUAGUS RIVER, MILBRIDGE, ME
Economic Analysis

EXISTING CONDITIONS:

Milbridge is a small village of 1310 people on the coastline of Maine. Their primary source of income comes from their commercial fishing fleet.

There are forty three boats that make up the commercial fleet in Milbridge. Most of the boats moor between Jordon Pier and the Turner Cove area. The fishermen fish for a variety of species in the area. Among the species are lobster, scallops, sea urchines and sardines. There are approximately eight wholesalers in the area that the fisherman sell their catch to.

There are very few recreational boats in the Milbridge area at the present time. The harbormaster did say that in the past few years more recreational boats were mooring off the surrounding islands during the summer months.

PROBLEM

In essence, the forty three boats which comprise the commercial fleet do not have sufficient anchorage area. The fleet which now moors scattered along the federal channel, is virtually unprotected from strong winds, winter storms and ice during the winter months. It incurs both damages and tidal delays in its current location. The proposal to dredge Turner Cove and provide an anchorage would alleviate these cost. Out of the forty three commercial fishing boats that moor in this area only nine remain to fish through the winter. In order to fish through the winter the nine remaining boats must move to near by harbors.

BENEFITS

Reduction in Damages:

Each year approximately one boat is totally lost due to winter storms and ice conditions. The average cost to replace a fishing boat is \$50,000-\$70,000. All of the fishermen that answered the questionnaires do carry insurance on their boats but, in some cases not enough to cover the full cost to replace their boats.

Calculation:

of boats lost/year X cost to replace boat = reduction in damages

1 boat lost/year X \$50,000 to replace = \$50,000 reduction in damages.

TOTAL REDUCTION IN DAMAGES - \$50,000

Transfer of Boats:

There are two cost incurred in the transfer of boats during the winter months. One, the actual transfer of the boats and two, the daily transportation to and from the harbor.

First, all of the nine boats that fish through the winter either moor in Corea Harbor or Winter Harbor. Neither of these harbors charge mooring fees to the fisherman that transfer in during the winter months. Corea and Winter Harbor are 14 and 17 nautical miles, respectively. The fishermen must transfer their boats twice every year.

Computations:

Fuel Cost: # of Boats X Time to Transfer X Gallons Used/Hour X Cost of Fuel X # of Times Transferred/Year.

9 Boats X 4 Hours X 4 Gallons/Hour X \$1.15 Fuel Cost
X 2 Times/Year = \$331.20

Labor Cost: # of Boats X # of Crew Members X # of Hours X Wage Rate X # of Times Transferred/Year

9 Boats X 2 Crew Members X 4 Hours X \$8.65 Wage Rate
X 2 Times/Year = \$1,245.60

Second, the daily transportation to the other harbors and the transfer of catch back to Milbridge. It is assumed at this stage that the fishermen will fish approximately 15 days out of the month.

Computations:

Fuel Cost: # of Vehicles X # of Miles X Price/Mile X # of Times/Day X # of Days/Month X # of Months/Year

9 Vehicles X 40 Miles X .30/Mile X 2 Trips X 15 Days
X 4 Months = \$12,960

Labor Cost: # of Boats X # of Crew members X Wage Rate X # of Hours to Transfer X # of Trips/Day X # of Days/Month X # of Months/Year

9 Boats X 2 Crew members X \$8.65 Wage Rate X 1 Hour X
2 Trips X 15 Days X 4 Months = \$18,684

TOTAL COST TO TRANSFER - \$33,220.80
Say \$33,200.00

Reduction in Storage Charges:

Each winter the remaining thirty-four boats must be pulled from the water and stored. The estimated cost to store a boat is \$500.00 per season. It is assumed at this stage that half these boats would remain fishing through the winter if Turner Cove was dredged.

Computations:

Storage Cost: # Boats X Storage Fee

17 Boats X \$500.00 Storage Fee = \$8,500.00

TOTAL COST OF STORAGE - \$8,500.00

Elimination of Tidal Delays:

Seventy three percent of the fisherman that returned the questionnaires reported experiencing tidal delays. Seventy three percent of the commercial fishing fleet is 31 boats during the summer and seven boats for the winter. The average delay is two hours long and it occurs approximately seven times per month.

Computations:

Summer Season (May - December, 8 Months)

Labor Cost: # of Boats X # of Crew X Average Time of Delay X
Wage Rate X of Delays/Month x # of Months/Year

31 Boats X 1.5 Crew members X 2 Hour Delay X \$8.65
Wage Rate X 7 Delays/month X 8 Months/year =
\$45,049.20

Fuel Cost: # Boats X Length of Delay X # Delays/Month X
Months/Year X Gallons/Hour X Price/Gallon

31 Boats X 2 Hour Delay X 7 Delays/Month X
8 Months/Year X 4 Gallons/Hour X \$1.15/Gallon =
\$15,971.20

Winter Season (January - April, 4 Months)

Labor Cost: 7 Boats X 1.5 Crew members X 2 Hour Delay X \$8.65
Wage Rate 7 Delays/Month X 4 Month/Year = 5,086.20

Fuel Cost: 7 Boats X 2 Hour Delay X 7 Delays/Month X
4 Months/Year X 4 Gallons/Hour X \$1.15 Price/Gallon
= 1,803.20

BENEFIT TO ELIMINATION OF TIDAL DELAYS - \$67,909.80
Say - \$68,000.00

SUMMARY OF BENEFITS:

Elimination of Damages	\$50,000.00
Elimination of Transfer Charges	33,200.00
Elimination of Storage Charges	8,500.00
Elimination of Tidal Delays	<u>68,000.00</u>
TOTAL BENEFITS	159,700.00
SAY	\$160,000.00

PRELIMINARY RECONNAISSANCE REPORT

BUCKS HARBOR
MACHIASPORT, MAINE

ENVIRONMENTAL INPUT

FEBRUARY 1989

PRELIMINARY RECONNAISSANCE REPORT FOR A PROPOSED SECTION 107 SMALL NAVIGATION IMPROVEMENT PROJECT AT TURNER COVE (NARRAGUAGUS RIVER), MILBRIDGE, MAINE

A. PROFESSIONAL OBSERVATIONS:

The proposed project alternative entails the dredging of Turner Cove to provide a protected anchorage area in Turner Cove. Dredging would remove approximately 87,000 cubic yards of substrate material for the required amount of anchorage (7' anchorage area and a 9' channel entering the cove).

An alternative that may be considered during the Reconnaissance Phase is the construction of two breakwaters northeast of Mitchell Point. This would provide protection for Jordan's Pier and would also provide a significant amount of protected anchorage area. This area would be dredged (current depth = 4'), but no intertidal habitat would be affected. This alternative has been determined to be economically infeasible.

On January 11, 1989 the team members (Don Birmingham, Heather Batchelder, Pamela Kildow, and Kerrin Dame) met with Mr. Owen Beal, Harbor Master of Milbridge and Mr. William Treworgy, Town Manager, at the Milbridge Town Hall.

Mr. Beal and Mr. Treworgy indicated that a shellfish (clam) resource exists in Turner Cove and in Narraguagus Bay, but the Maine Department of Marine Resources (MDMR) has prohibited the harvesting of clams due to pollution. Mr. Jay McGowen, the MDMR area biologist, said the clams in Turner Cove are a commercial size resource and that Turner Cove is one of the few clamming areas that is only opened for harvesting (winter months) when the bacteriological tests meet standard criteria (personnel communication 1/19/89). Mr. Beal said that clams were legally harvested for two months last year (Jan-Feb) when bacteriological counts were considered acceptable by the MDMR. Scallops, sea urchin's, and lobsters are harvested in the Narraguagus Bay but not in the immediate vicinity of Turner Cove. Mr. McGowen did not know if marine worms were harvested in Turner Cove but did say they were harvested in the area. He also added that there is a significant blue mussel resource at Long Point.

The site visit determined that Turner Cove is an intertidal area ledged on all land sides. The substrate appeared to consist of mud, gravel, and clay. Two small brooks drain into Turner Cove. Siltation is not a problem in Turner Cove, according to Mr. Beal. Wildlife species observed in Turner's Cove were 9 white-winged scoters (*Melanitta fusca deglandi*) and 5 black ducks (*Anas rubripes*). A single bufflehead (*Bucephala albeola*) was observed at Jordan pier. It appears that Turner Cove is a wintering area for some species of bay ducks; the ducks stay in the cove where they are not exposed to the strong winds of the open bay.

Follow-up work concerning natural resources at the site should include coordination with local, state, and federal agencies.

The proposed project has a potential to impact the clam and worm resources. Potential impacts include the permanent loss of significant intertidal habitat. If future studies indicate the existence of significant shellfish resources, project plans must include a detailed discussion of possible mitigation measures. The loss of intertidal benthic habitat (i.e. a special aquatic site) would require mitigation. Projects that remove intertidal area for navigation anchorages are not looked upon favorably by state and federal resource agencies. Additionally the dredging would be quite extensive given the 11.3 foot mean and 13.0 foot spring tidal ranges. The presence of ledge would also indicate the potential for blasting. The proposed alternative would therefore require extensive environmental documentation.

There is a dredge disposal site located approximately 6 nautical miles from Turner Cove. Further investigation will be needed to determine if this site can be used for the disposal of dredged material.

B. Future Studies

1. The Reconnaissance Phase studies should concentrate on obtaining quantitative information concerning the distribution and abundance of the shellfish resources (contact Jay Mc Gowen, MDMR, (207) 422-3167). Benthic sampling would be needed in any possible breakwater alignment and in the channel/anchorage area. A detailed shellfish census would also be performed. Input from local, state and federal agencies, and individuals would also be solicited.

2. The detailed project study phase should concentrate on developing mitigation measures (if required) during the preparation of the Environmental Assessment. These would include the avoidance of intertidal dredging by investigating alternative anchorages and the mitigations of habitat loss by constructing intertidal habitat through innovative dredged material disposal.

3. The disposal site will require detailed studies as to its adequacy within the state and federal standards.

C. Estimates

1. Reconnaissance Phase = \$7,000.

2. Detailed Project Report Phase = \$22,000.

Note: High cost is attributable to a) 3 day travel requirements, and; b) potential for significant adverse environmental impacts requiring extensive mitigation or preparation of an EIS.

D. Approval of Project Manager schedule for Reconnaissance

IAB/ERS can accommodate this work in FY 89.

E. Impacts on other NED Programs

No impacts.

PRELIMINARY RECONNAISSANCE REPORT

BUCKS HARBOR
MACHIASPORT, MAINE

PERTINENT CORRESPONDENCE

FEBRUARY 1989

TOWN OF MILBRIDGE

MILBRIDGE, MAINE

04658

TEL. 207-546-2422

RECEIVED

FEB 17 1987

WASHINGTON, DC

February 2, 1987

Col. Thomas Rhen, Division Engineer
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA. 02254-9149

Dear Col. Rhen:

The Town of Milbridge is currently undergoing significant growth within the community. Funds have and are being spent to up grade the Town water system, construction of secondary wastewater treatment facilities and improve the economic conditions of the Town.

We are a fishing community depending heavily upon our Marine resources. Significant private investments in fishing boats and equipment have been made in the past few years allowing our fishermen to expand their range and seasons beyond the seasonal limits of the past.

Two problems exist within our community which we have no immediate method of resolving and which are the purpose of this letter of request. We are requesting development funds from HUD to redo our commercial district as will be necessary for our revitalization to be successful. This work is attempting to focus the community on the resources from which it developed - the waterfront. The program we are pursuing will improve access to the waterfront but cannot be expanded to stabilize the existing waterfront which is eroding severely, in some areas up to 6 feet a year. Secondly, our fishermen have access to the Jordan Pier, a municipal pier built in the early 70's for aiding in development of the commercial fishing on the area. In fact, this pier construction followed closely the Corps dredging of a new channel and anchorages in the Narraguagus Bay and River. The problem is that because of lack of breakwater facilities, conditions exist which make this pier and its anchorage only very marginally useable. Ice flows from the Narraguagus River damage the pier and prohibit the mooring of boats in the anchorage near the pier, the strong tidal currents during ebb tide prohibits boats from utilizing the pier for off or on loading and no protection of the pier exists for using the pier during northeasterly and southeasterly winds. This dock is only accessible seasonally during certain tidal periods and during fair weather.

Problem one - bank stabilization for the shoreline near town would encompass about 400 feet of shoreline and cost approximately \$116,000 (this is based upon a recently completed 200 foot stabilization completed for the Milbridge Health Center which abuts the eroding shoreline). The breakwater problem has not been fully analyzed at this time and we believe it is necessary to have this matter reviewed by someone from your office and our local fishermen to determine the most feasible way to make the existing pier useable by the area fishermen.

This letter is to request that the Corps review these two items. The Town of Milbridge is in real need of assistance in resolving these issues and would appreciate any assistance the Corps may offer. Please inform us of any formal steps we must take to become eligible for your assistance.

Very truly yours,

Wayne Willey
Lonja Sawyer

Selectmen, Town of Milbridge

cc: U.S. Rep. Olympia Snowe
U.S. Rep. Joseph Brennan
U.S. Senator George Mitchell
U.S. Senator William Cohen

TOWN OF MILBRIDGE

MILBRIDGE, MAINE

04658

TEL 207-546-2422

April 14, 1987

Colonel Thomas A. Rhen, Division Engineer
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02254-9149

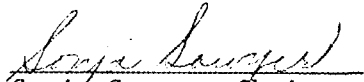
Dear Col. Rhen:

Some local fishermen met with us recently to discuss the possibility of building a breakwater in Narraguagus Bay. As you may remember from our letter of February 2, 1987, our lack of a natural harbor creates problems for our fishermen. We strongly feel that a breakwater facility would alleviate these problems.

At our meeting with our Harbor Master and fishermen, it was determined that the most logical location for a breakwater would be from our town-owned Jordan Pier to Turner's Cove.

We are hereby requesting a study for the purpose of determining the feasibility of this project.

Sincerely yours,


Sonja Sawyer, Chairman


Wayne Willey


Harold West

Board of Selectmen
Milbridge, ME